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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,311	12/19/2001	Cornelis Frederik du Toit	PARA 49781	8224
27512	7590	11/25/2003	EXAMINER	
WILLIAM J. TUCKER 8650 SOUTHWESTERN BLVD. #2825 DALLAS, TX 75206			GLENN, KIMBERLY E	
			ART UNIT	PAPER NUMBER

2817

DATE MAILED: 11/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/025,311	DU TOIT ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kimberly E Glenn	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25-28 is/are allowed.
- 6) ☒ Claim(s) 1 2 4 5-12 16 17 19 21-24 is/are rejected.
- 7) ☒ Claim(s) 3,13-15,18 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 6, 7, 11, 12, 16, 17, 19, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 (of record) in view of Saad US Patent 4,978,934.

Davidovitz disclose a waveguide to microstrip comprising: a microstrip transmission line structure having a ground plane 13 separated from a strip conductor 15 by a dielectric layer (column 5 line 42) 16, said ground plane 13 defining an aperture 14; a waveguide channel 11 having a conductive periphery being electrically coupled to the ground plane to provide a waveguide short circuit wall located at the end of the waveguide channel and the end of the waveguide is electrically coupled with ground plane. The longitudinal axis of the waveguide channel is perpendicular to the ground plane. The long dimension of the aperture is transverse to the microstrip line. The waveguide channel has a rectangular cross-section. The ridge includes a smoothly tapered height (or width). (Figure 1A and column 4 line 65 through column 5 line 40)

Thus Davidovitz is shown to teach all the limitations of the claim with the exceptions of the waveguide having at least one conducting ridge inside the waveguide channel, a second ridge, and the waveguide channel having an elliptical/circular cross-section.

Saad teaches in figure 3, an improved semi-flexible double-ridge waveguide. The waveguide 20 having ridges 22 and 24 is formed of a special cross-sectional shape, which is distinctly devoid of any sharp corners, and has a dumbbell-like (elliptical) contour.

One skilled in the art at the time of the invention would have found it obvious to replace the general waveguide of Davidovitz with the double ridge waveguide of Saad. The motivation for this modification would have been to provide greater bandwidth with relatively low signal attenuation.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 (of record) in view of Saad US Patent 4,978,934 in view of Josefsson et al US Patent 6,081,241. (Of record)

Davidovitz and Saad disclose a waveguide to microstrip comprising: a microstrip transmission line structure having a ground plane 13 separated from a strip conductor 15 by a insulating layer 16, said ground plane 13 defining an aperture 14; a waveguide channel having a conductive periphery being electrically coupled to the ground plane to provide a waveguide short circuit wall located at the end of the waveguide channel; the waveguide having at least one conducting ridge inside the waveguide channel and the end of the waveguide is electrically coupled with ground plane.

Davidovitz and Saad are shown to teach all the limitations of the claim with the exception of the aperture having an H-shape.

Josefsson et al shows that it is well known in the art to have the aperture have an H shaped.

One skilled in the art at the time of the invention would have found it obvious to replace then general aperture of Davidovitz with the H shaped aperture of Josefsson et al since Josefsson et al teaches that H shaped aperture are well adapted to cases where the wavelength of the signal is large relative to the maximum length of the slot. (Column 5 lines 48-62)

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 (of record) in view of Saad US Patent 4,978,934 in view of Vezmar US Patent 6,097,264. (Of record)

Davidovitz and Saad disclose a waveguide to microstrip comprising: a microstrip transmission line structure having a ground plane separated from a strip conductor by a insulating layer, said ground plane 13 defining an aperture 14; a waveguide channel having a conductive periphery being electrically coupled to the ground plane to provide a waveguide short circuit wall located at the end of the waveguide channel; the waveguide having at least one conducting ridge inside the waveguide channel and the end of the waveguide is electrically coupled with ground plane.

Davidovitz and Nusair et al are shown to teach all the limitations of the claim with the exceptions of the ridge being stepped in the height (width).

Vezmar teaches that it is well known in the art to have ridges, which are stepped in height. (Figure 2a and 4)

One skilled in the art at the time of the invention would have found it obvious to replace the ridge of Nusair et al with the stepped ridge of Vezmar since examiner takes notice of the equivalence of the general ridge of Nusair et al and stepped ridge of Vezmar for their use in the

transmission line art and the selection of any of these known equivalents to provide a means to change the polarization of the signal would be within the level of ordinary skill in the art.

Claim 8 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 (of record) in view of Saad US Patent 4,978,934 in view of Pozar US Patent 5,793,263. (Of record)

Davidovitz and Saad disclose a waveguide to microstrip comprising: a microstrip transmission line structure having a ground plane separated from a strip conductor by a insulating layer, said ground plane 13 defining an aperture 14; a waveguide channel having a conductive periphery being electrically coupled to the ground plane to provide a waveguide short circuit wall located at the end of the waveguide channel; the waveguide having at least one conducting ridge inside the waveguide channel and the end of the waveguide is electrically coupled with ground plane.

Davidovitz and Saad are shown to teach all the limitations of the claim with the exception of the ground plane being bonded to the waveguide using a conductive adhesive or epoxy or solder.

Pozar show that it is well known in the art for the ground plane to be bonded to the waveguide by means of conductive epoxy. (Column 3 lines 42-49)

One skilled in the art at the time of the invention would have found it obvious to have the ground plane being bonded to the waveguide using a conductive adhesive or epoxy or solder. The motivation for the limitation would be provide a hermetic seal between the ground plane and the waveguide.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 (of record) in view of Saad US Patent 4,973,934 in view of Watson US Patent 3,852,689 (of record).

Davidovitz and Saad disclose a waveguide to microstrip comprising: a microstrip transmission line structure having a ground plane separated from a strip conductor by a insulating layer, said ground plane 13 defining an aperture 14; a waveguide channel having a conductive periphery being electrically coupled to the ground plane to provide a waveguide short circuit wall located at the end of the waveguide channel; the waveguide having at least one conducting ridge inside the waveguide channel and the end of the waveguide is electrically coupled with ground plane.

Davidovitz and Saad are shown to teach all the limitations of the claim with the exceptions of the waveguide semi circular waveguide.

Watson teaches that it is well known in the art to have semi-circular waveguide. (Figure 1)

One skilled in the art at the time of the invention would have found it obvious to replace the rectangular cross section waveguide of Davidovitz with the semi-circular cross section waveguide of Watson since examiner takes notice of the equivalence of the rectangular waveguide and the semi- circular waveguide for their use in the transmission line art and the selection of any of these known equivalents to provide a means to transmitting a signal would be within the level of ordinary skill in the art.

***Response to Arguments***

With regards to applicant argument regard the general insulating layer of Davidovitz being replace with a dielectric layer. Davidovitz disclose in column 4 line 42, that the insulating layer 16 is a dielectric. With regards to applicants argument regard the no suggestion or teaching in Davidovitz for providing a waveguide having at least one conductive ridge. Saad teaches double ridge waveguide provides broader bandwidth with low signal attenuation. With regard to applicant argument regarding the projection gap between the ridges on the ground plane being transverse to the microstrip line. The rejection has been withdrawn.

***Allowable Subject Matter***

Claims 3, 13-15, 18 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 25-28 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: With regards to claims 13 and 25, the prior art of record does not disclose or fairly teach a quarter wavelength matching sections in the microstrip transmission line. With regards to claims 14 and 26, the prior art of record does not disclose or fairly teach an open circuited stub, and a quarter wavelength matching section in the microstrip transmission line. With regards to claims 15 and 27, the prior art of record does not disclose or fairly teach a short circuited stub using a via, and a quarter wavelength matching section in the microstrip transmission line. With regards to claims 20 and 28, the prior art of record does not disclose or fairly teach the aperture having a C-shape.



***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Krank et al US Patent 3,396,350.

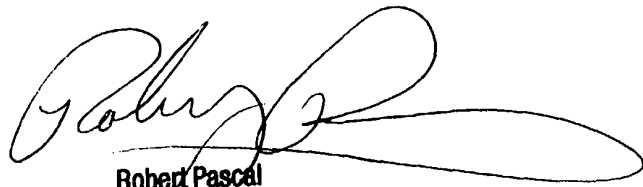
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly E Glenn whose telephone number is (703) 306-5942. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Kimberly E Glenn  
Examiner  
Art Unit 2817

keg  
November 17, 2003

  
Robert Pascal  
Supervisory Patent Examiner  
Technology Center 2800